

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A selective hydrogenation catalyst for selectively hydrogenating an unsaturated hydrocarbon, which comprises mainly the following active components loaded on a porous inorganic supporter support based on the total weight of catalyst:

- (1) 0.001 - 1% of at least one element selected from the group consisting of Pt, Pd, Ni, Ru, Co, and Rh;
- (2) 0.001 - 10% of at least one element selected from the group consisting of Ag, Cu, Zn, K, Na, Mg, Ca, Be, Sn, Pb, Sr, Ba, Cd, Ra, Fe, Mn, Zr, Mo, and Ge;
- (3) 0.1 - 1.5% of at least one of a rare earth metals metal; and
- (4) 0.03 - 5% of Bi;

wherein the rare earth metal is selected from the group consisting of Sc, Y, and Lanthanides in Group IIIB of the periodic table of elements.

- 2. (Cancelled)
- 3. (Original) The catalyst according to claim 1, wherein the weight percent of the active component (1) is 0.008-0.3%, based on the total weight of catalyst.
- 4. (Original) The catalyst according to claim 1, wherein the weight percent of the active component (1) is 0.01-0.15%, based on the total weight of catalyst.
- 5. (Cancelled)
- 6. (Original) The catalyst according to claim 1, wherein the weight percent of the active component (2) is 0.01-2%, based on the total weight of catalyst.

7-10. (Cancelled)

11. (Currently amended) The catalyst according to claim 1, wherein the weight percent of the active component (4) is ~~0.005-1%~~ 0.03-1%, based on the total weight of catalyst.

12. (Original) The catalyst according to claim 1, wherein the active component (1) is Pd.

13. (Original) The catalyst according to claim 12, wherein the thickness of Pd layer of the catalyst is 5-30 μm .

14. (Original) The catalyst according to claim 1, wherein the active component (2) is Ag.

15. (Original) The catalyst according to claim 1, wherein the active component (2) is Ag and K.

16. (Original) The catalyst according to claim 1, wherein the active component (2) is Ag and Na.

17. (Currently amended) The catalyst according to claim 1, wherein the rare earth metal is selected from the group consisting of La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, [[or]] and mixtures thereof.

18. (Original) The catalyst according to claim 1, wherein the rare earth metal is La and/or Nd.

19. (Currently amended) The catalyst according to claim 1, wherein the supporter support is selected from the group consisting of diatomaceous earth, spinel, SiO_2 , TiO_2 Al_2O_3 , and two or more combinations thereof, [[which]] and the shape of the

support is granular, spherical, gear-shaped, laminar, or strip, and has a specific surface area [[is]] of 1-200m²/g.

20. (Currently amended) The catalyst according to [[claim1]] claim 1;
wherein the supporter support is selected from the group consisting of Al₂O₃, TiO₂ [[or]]
and SiO₂ [[which]] and the shape of the support is gear-shaped, and has a specific
surface area [[is]] of 2-120m²/g.

21. (Currently amended) The catalyst according to claim 1, wherein the
shape of supporter support is gear-shaped, and has a specific surface area [[is]] of
2-50m²/g.

22. (Currently amended) A process for preparing [[the]] a catalyst
according to claim 1, wherein the rare earth metal component (3) is loaded first onto the
support, or the rare earth metal component (3) and K or Na the component (2) are
loaded cocurrently concurrently first onto the support, and then other active components
are loaded stepwise or concurrently onto the support.

23. (Currently amended) A process for selectively hydrogenating alkyne
and diolefin having two to four carbon atoms in C₂ fraction or C₃ fraction from a
petroleum hydrocarbon thermal cracking process into olefin by using the, which process
comprises passing the alkyne and diolefin having two to four carbon atoms in C₂
fraction or C₃ fraction and hydrogen gas into a reactor loaded with a catalyst according
to claim 1.

24. (Currently amended) A process for selectively hydrogenating alkyne
and diolefin having two to four carbon atoms in C₂ fraction or C₃ fraction from a
petroleum hydrocarbon thermal cracking process into olefin by using the, which process

comprises passing the alkyne and diolefin having two to four carbon atoms in C₂ fraction or C₃ fraction and hydrogen gas into a reactor loaded with a catalyst according to claim 15.

25. (New) A process for selectively hydrogenating alkyne and diolefin having two to four carbon atoms in C₂ fraction or C₃ fraction from a petroleum hydrocarbon thermal cracking process into olefin, which process comprises passing the alkyne and diolefin having two to four carbon atoms in C₂ fraction or C₃ fraction and hydrogen gas into a reactor loaded with a catalyst according to claim 16.